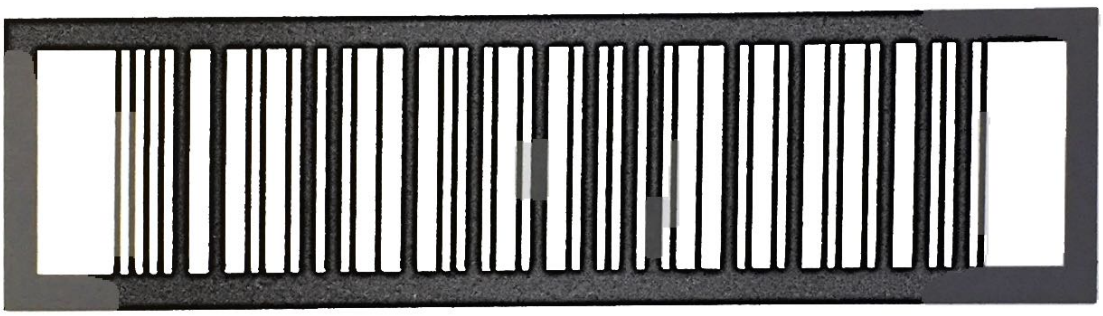
U.P.C.
SHIPPING CONTAINER CODE AND SYMBOL SPECIFICATION MANUAL



0 00 12345 67890 5

SEPTEMBER, 1990

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In this publication, the letters "U.P.C." are used solely as an abbreviation for the "Universal Product Code" which is a product identification system. They do not refer to the UPC®, which is a federally registered certification mark of the International Association of Plumbing and Mechanical Officials ("IAPMO") to certify compliance with the Uniform Plumbing Code as authorized by IAPMO.

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INTRODUCTION

Overview

This document describes how the Universal Product Code (UPC) system identifies shipping containers. It shows how to uniquely identify each container of a product with a numeric code and how to represent that code in a machine readable bar code symbol. The guidelines and specifications in this manual are not intended to be used on the consumer package of a product (instructions for which are contained in the UPC Symbol Specification Manual), but on the containers in which consumer packages are shipped from manufacturer to wholesalers and retailers. They are also applicable to container assortments of industrial/business products.

In developing these standards, the Uniform Code Council has attempted to build a system which supports existing industry practices in regard to packaging products for sale to end users and in assembling assortments of products in containers for shipment through distribution channels. These practices may vary from industry to industry. Therefore, the UPC standards offer some alternatives so that manufacturers can use a coding scheme best suited to their particular needs. In providing these options, the UCC believes that the decision on what quantities the products are packaged and sold in should rest with the manufacturer, based on his perceptions of the needs and desires of customers and consumers. The Council hopefully is providing a system which will be responsive to whatever decision the manufacturers and their trading partners may reach in this regard.

The UPC Shipping Container Code is very similar in structure to the UPC product code. Both employ a unique 6 digit manufacturer number which identifies the producer or labeler of the product and a 5 digit item number which the manufacturer assigns to a specific product. Both employ a modulo check digit at the end of the code and have a prefix field preceding the manufacturer number and item number fields.

There is only one way, under the UPC system, to identify different end products produced by an individual manufacturer. Each individual product (commonly referred to as a stockkeeping unit or SKU) must have a unique 5 digit item number.

However, when end products are packaged into shipping containers, there are two ways, under the UPC system, in which different assortments of the same end product can be identified. One method is to change the 5 digit item number itself, so that each individual assortment has a unique item number. Because, when the UPC system was first established, it was common practice in the grocery industry to uniquely code each shipping container, this method has been widely employed in that industry. If the item number on the shipping container duplicates the item number on the end product it contains, uniqueness is maintained under this method by employing the prefix field number one (as explained in detail later in this specification).

The second method for identifying different assortments of the same end product can only be employed when the assortment pattern is set up in a hierarchical ("box within a box") scheme. For example, let us assume the end product is a single unit, the first level of assortment a 12 unit sleeve package, the second level a box of four 12-unit sleeve packages, the third level a master case of ten boxes (each containing four 12-unit packages) and the fourth level a unitized pallet of 40 master cases. Given this pattern of assortment, the manufacturer may choose to use the same 5-digit item number on the single unit and on all four of the packs of that product. Uniqueness is maintained under this method by employing one of the prefix field numbers 1 through 7 (as explained in detail later in this specification).

SYMBOL STRUCTURE

The UPC shipping container code symbology, called Interleaved 2 of 5 (I 2/5), is a numeric bar code with a unique start character and a unique stop character. This bar code uses a series of wide and narrow bars and spaces to represent each number. The bar codes specified are fixed length. A detailed explanation is included in Appendix A.

SHIPPING CONTAINER CONTENTS: FIXED AND VARIABLE

There are UPC code/symbol specifications for two types of shipping containers: fixed content and variable content. The fixed content 14 digit code and symbol specification is used to identify shipping containers whose contents are products sold on a fixed weight/fixed unit of measure basis.

The variable content 14+6 digit code and symbol specification is used when identifying shipping containers whose contents are products which are sold by the pound or other unit of weight or by some other variable unit of measure (e.g., gallons, square yards, etc.). The code represents the quantity of the product as well as its identity.

Each of these two specifications is presented separately in this manual. Fixed content is on blue paper. Variable content is on green paper. Common information is on white paper.

TWO ADDITIONAL UPC BAR CODING SPECIFICATIONS

1. A serialized shipping container code and symbol has been developed to allow identification of individual shipping containers containing non-standard assortments of products. Intended primarily for shipments of apparel and textile items to department, specialty and mass retailer outlets, the code identifies the manufacturer and each of his non-standard shipping containers in a serial format.
2. A supplementary (i.e., "add on") bar code scheme is under development which would allow proprietary or industry specific data to be encoded following the standard UPC shipping container symbol.

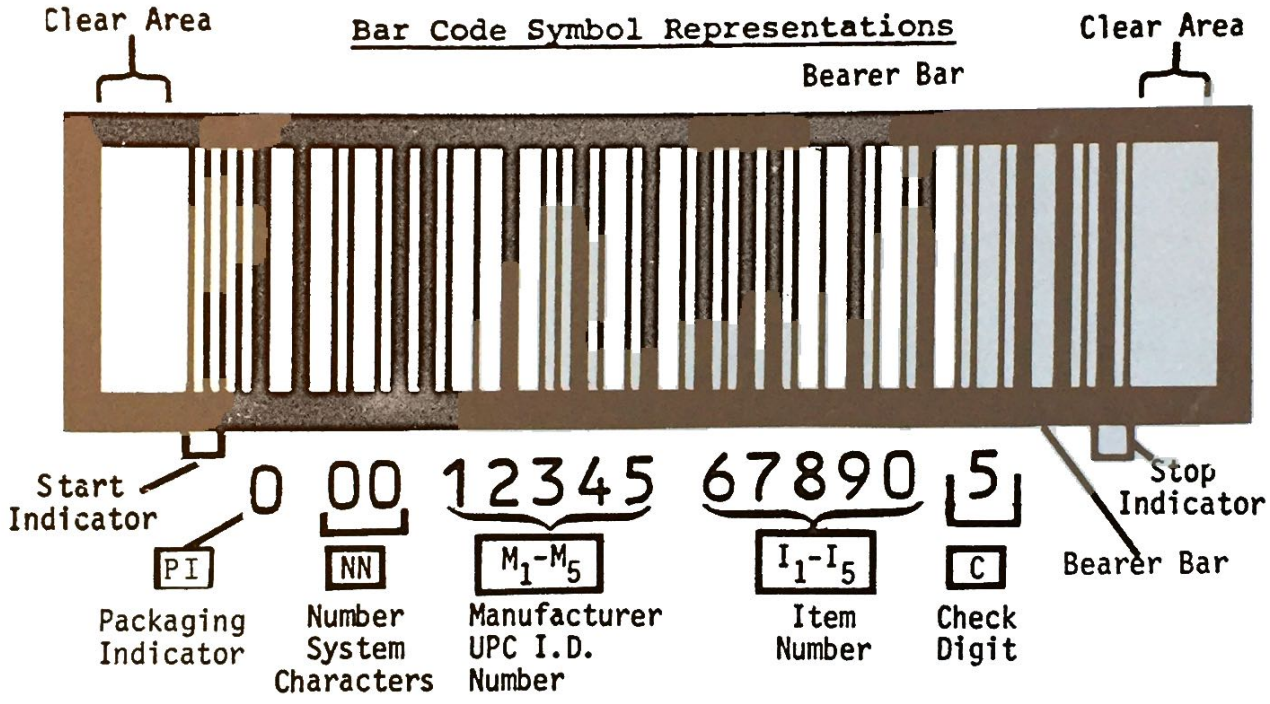
Both of these developments employ a symbology compatible with, but distinct from, Interleaved 2 of 5. Specifically, the symbology is UCC/EAN-128. System designers should keep this fact in mind.

Contact the UCC office in Dayton for current information regarding the supplementary coding procedure. The serialized case coding and UCC/EAN-128 symbology are specified in the UCC publication *Application Specification for the UCC-128 Serial Shipping Container Code.*

SHIPPING CONTAINER CODE FORMAT
FIXED CONTENT PRODUCTS

PI	=	Packaging Indicator
NN	=	Number System Characters
M_1-M_5	=	Manufacturer Identification Number
I_1-I_5	=	Item Number
C	=	Check Digit

Figure 1



(Human Readable Characters in OCR-B Font)

IMPLEMENTATION

The expanded use of the packaging indicator (P.I.) described in this standard will support major improvements in distribution operations in the future. The 13 digit code (plus check digit) allows for unique identification of several levels of packaging, thereby providing new flexibility in warehouse operations and electronic communications. Systems should be established to read a 14-digit symbol

In some industries (e.g. grocery), systems to take advantage of this new hierarchical coding structure are not yet in place. Manufacturers should take this into account during initial implementation.

Specifically, where multiple inner pack or case sizes exist for individual items, and retail or wholesale customers depend on unique item numbers for container identification, manufacturers should not discontinue use of the unique item numbers until their customers have time to prepare for the change. Products with multiple packaging configurations, currently identified by unique item numbers, should continue to have unique item numbers until customers have adjusted their data bases and systems to recognize the P.I.

In other industries, where retailers/wholesalers have not begun to use shipping container numbers, manufacturers may be able to implement the P.I. as the only method of package level identification.

PACKAGING INDICATOR (P.I.)

UPC shipping container coding provides a unique identity to each shipping container, intermediate package or standard pallet.

Uniqueness is obtained by using the combination of a single character packaging indicator and a five character item number. All characters are numeric.

The P.I. can be any digit from 0 (zero) through 7 (seven) for fixed content products. Where the same UPC item number is assigned to both the consumer product and various levels of inner and outer cartons, the P.I. digits from 1 (one) through 7 (seven) must be selected. This leaves P.I. 0 (zero) for use with unique item numbers or for use when both a UPC Version "A" Symbol and a UPC Shipping Container I 2/5 Symbol must appear on the same carton (for products where the shipping container also acts as the package for the consumer product).

The use of different P.I.'s with the same item number is meant to be applied to the various levels of packaging of individual products. For example, the inner sleeve, inner carton, shipping container, and standard pallet for one product.

If two products or an assortment of sizes and colors are packaged together, a new, unique item must be assigned to each assortment, and/or shipping container. If a product is packaged in more than one quantity (e.g., packed in intermediate packs of both 12 and 24 units) one hierarchy of packaging may contain the same item number along with varying packaging indicators. The second hierarchy of packaging of the same product should contain unique item numbers. See example on the next page.

The coding method currently employed by the grocery and other retail oriented industries is the use of a unique UPC item number for each and every level of packaging. Establishment of P.I.'s 0 (zero) through 7 (seven) does not obsolete the use of the P.I. (previously called the assortment indicator) as it was specified in the October 1984 UPC Shipping Container Symbol Specification manual.

—The P.I. can continue to be 1 (one) when the UPC code on the case and on the individual items inside the case are the same.

—The P.I. is always 0 (zero) when the UPC code on the case and on the individual items inside the case are different.

One exception was mentioned earlier in the description of the P.I. If a product needs to contain both a UPC consumer item Version "A" bar code symbol to allow scanning at the retail point of sale and a UPC shipping container I 2/5 bar code symbol, the P.I. for the shipping container code should be 0 (zero) to make both codes consistent. The P.I. 1 (one) should not be used because this would result in two different codes for the same item.

NOTE: All levels of packaging intended for retail sale should have UPC Version A symbols to allow scanning at the point of sale.

P.I. number 8 (eight) is reserved for future use.

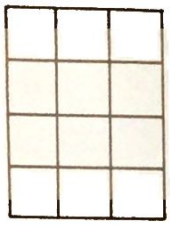
P.I. number 9 (nine) will continue to represent a variable content shipment. The 9 (nine) indicates to the scanner that a mandatory variable content add-on symbol follows the primary symbol.

NOTE—***It is important for manufacturers to be consistent in their shipping container coding methodology.*** For example, in the use of P.I.'s 1-7 for different levels of packaging, or the use of unique item numbers for each level of packaging, or the use of 0 and 1 as in the grocery industry. Several coding examples follow.

UPC Shipping Container Coding

Individual Red Towel
UPC # 012345 11114 C/D

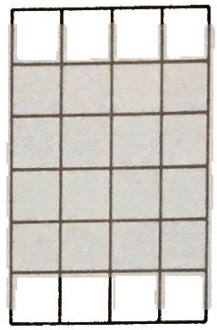
Carton of 12 Red Towels



Shipping Container Code
100 12345 11114 C/D

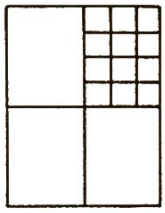
Individual Red Towel
UPC # 012345 11114 C/D

Carton of 24 Red Towels



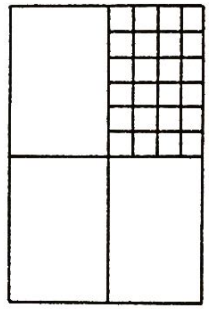
Shipping Container Code
000 12345 11115 C/D

Carton of 4 Units
of 12 Red Towels



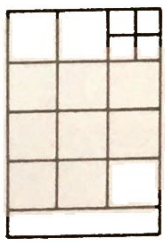
Shipping Container Code
200 12345 11114 C/D

Carton of 4 Units
of 24 Red Towels



Shipping Container Code
000 12345 11116 C/D

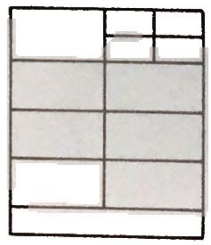
Pallet of Red Towels Packed
in Units of 4 12's per Inner Carton



Shipping Container Code
300 12345 11114 C/D

P.I.'s 1-3 used with end product item number

Pallet of Red Towels Packed
in Units of 4 24's per Inner Carton



Shipping Container Code
000 12345 11117 C/D

P.I. 0 used with unique item numbers

EXAMPLES OF UPC FIXED CONTENT SHIPPING CONTAINER CODING

Method 1 (all individual items, *no inner packs*)

(A)	Consumer Package (i.e., individual bar of soap)	00 12345 00001 0
	Shipper of 36 bars	100 12345 00001 7
	Shipper of 50 bars	000 12345 00002 7
	Shipper of 80 bars	000 12345 00003 4

or

(B)	Consumer Package (i.e., individual bar of soap)	00 12345 00001 0
	Shipper of 36 bars	000 12345 00002 7
	Shipper of 50 bars	000 12345 00003 4
	Shipper of 80 bars	000 12345 00004 1

Method 2 (boxes within boxes; *inner packs of 12 bars each)*

(A)	Consumer Package (i.e., individual bar of soap)	00 12345 00001 0
	Shipper/inner pack of 12 bars	100 12345 00001 7
	Shipper of 4 12's	000 12345 00002 7
	Pallet of 10 shippers of 4 12's	000 12345 00003 4

or

(B)	Consumer Package (i.e., individual bar of soap)	00 12345 00001 0
	Shipper/inner pack of 12 bars	100 12345 00001 7
	Shipper of 4 12's	200 12345 00001 4
	Pallet of 10 shippers of 4 12's	300 12345 00001 1

NUMBER SYSTEM CHARACTER (NN)

The number system character is assigned by the Code Council as the first digit in each manufacturer's six digit UPC identification number. A zero is always inserted before the number system character to complete this section of the code.

For products with a UPC manufacturer's identification number which contains the number system character 0 (zero), the UPC shipping container code number system characters are always "00".

For products with a UPC manufacturer's identification number which contains the number system character 3 (three), the UPC shipping container code number system characters are always "03".

For products with a UPC manufacturer's identification number which contains the number system character 6 (six) or 7 (seven), the shipping container code number system characters will always be "06" or "07" respectively.

MANUFACTURER IDENTIFICATION NUMBER (M_1-M_5)

This five digit number is always the manufacturer's UPC identification number. When the number system character is added, the complete manufacturer I.D. number is 6 digits.

SHIPPING CONTAINER ITEM NUMBER (I_1-I_5)

There are two procedures for assigning UPC shipping container item numbers:

1. The same five character item number which is assigned to identify the product in digits 7-11 of the UPC Consumer Package Code may be used. It may be used to identify several levels of packaging of the same product in conjunction with the use of a different packaging indicator (1-7) for each assortment, shipping container or pallet. Refer to pages 4-6 for coding instructions.
2. A unique five character number may be used for each level of packaging of the same product. A unique item number must always be used to identify all assortments which contain products with more than one UPC consumer package code number inside the inner carton or shipping container. Where the item number is different from the product inside the shipping container, the manufacturer must use the packaging indicator 0 (zero).

Whichever method/combination is selected by a manufacturer (for a specific manufacturer UPC I.D.) or industry, it should be applied consistently and all segments of the distribution channel notified.

CHECK DIGIT

The check digit is based upon the data in the other 13 digit positions, using the algorithm described in Appendix B. This digit provides additional data security and is an essential part of the symbol.

SPECIAL CODING SITUATIONS

1. *When the package in which the product is sold always acts as the shipping container. It will be scanned at the retail point of sale. It will also be scanned at the warehouse and/or receiving locations: example, television set.*

   The outer carton should contain both a UPC Version A symbol (normally printed on a label) and a UPC shipping container symbol located per the specification. Location of the Version A symbol should be carefully considered by the manufacturer. If the carton is heavy and does not lend itself to being scanned on a supermarket type scanner, then the UPC number will probably be keyed into the system by the checkout clerk, or scanned by a hand held scanner. To facilitate these actions, the Version A symbol should be located near the top of the carton. The UPC shipping container code *number* should also be printed on the *top right corner* of the carton per the specifications on page 15.
2. *Individual consumer packages (e.g., beverage can) are scanned at the retail point of sale, and the container in which they are packaged (e.g., 6 pack) is also scanned at the point of sale in retail stores.*

   An individual beverage can and the 6 pack must each contain a separate and unique UPC Consumer Package Number and UPC Version A or E symbol. The shipping containers (i.e., higher levels of packaging) may contain separate/unique item numbers or may contain the item number of the appropriate consumer unit coupled with unique packaging indicators.

HUMAN READABLE INFORMATION

The information encoded into the bar code symbol should be printed in a human readable font directly below the symbol (OCR-B Font is preferred). The characters are formatted with spaces to enhance readability as follows:

Separate position 1 and position 2 with 1 space.
Separate position 3 and position 4 with 1 space.
Separate position 8 and position 9 with 1 space.
Separate position 13 and position 14 with 1 space.

The human readable characters beneath the symbol have the following nominal character dimensions:

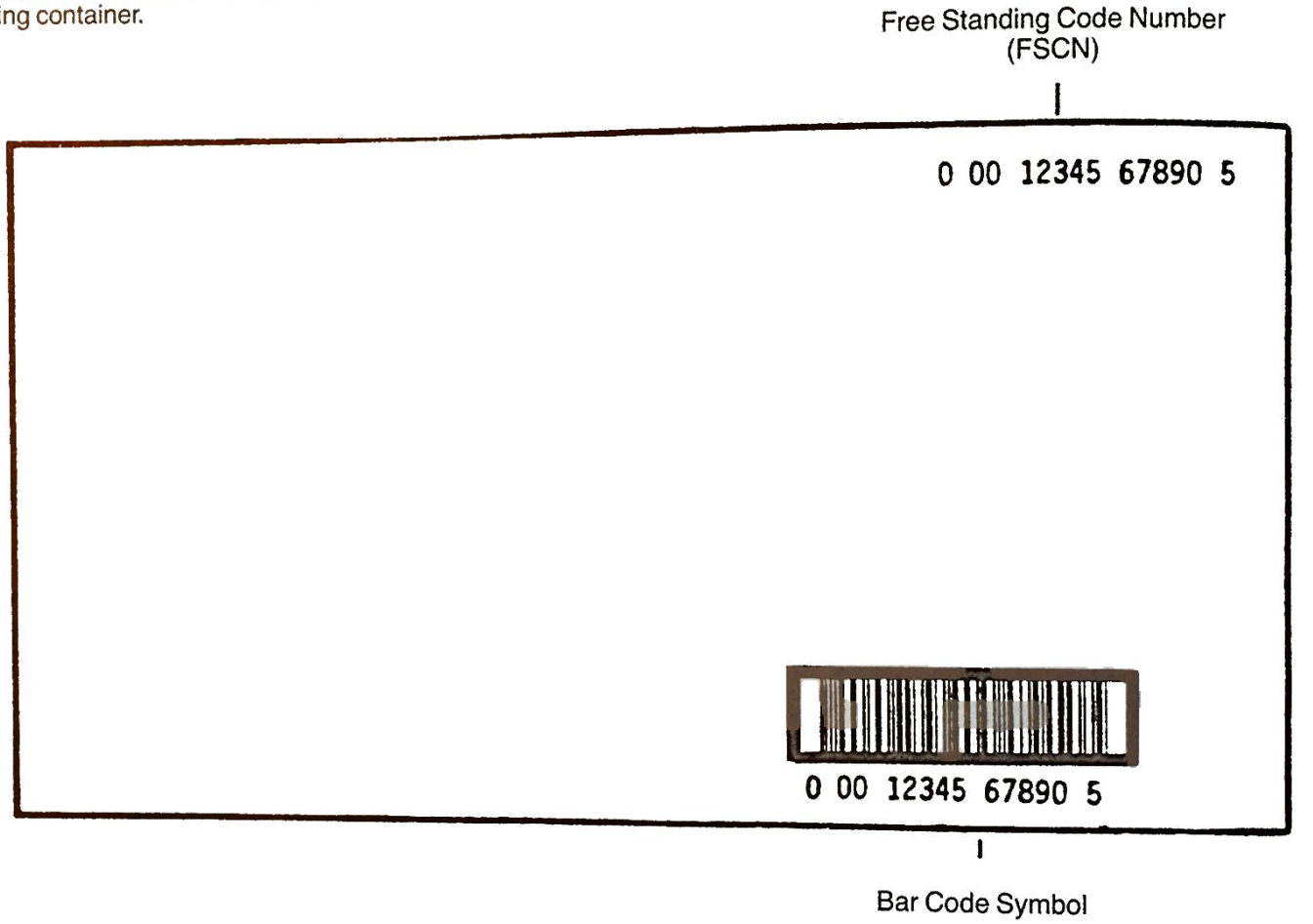
Overall height	0.23 inch (5.8 mm)
Typical overall width	0.14 inch (3.6 mm)
Stroke width	0.03 inch (0.76 mm)

Character centerline spacing (pitch) is 0.180 inch (4.57 mm). The size and spacing of characters remains the same for different horizontal magnifications, and different substrates.

The 14 character code may be printed in a human readable form in an area away from the bar code symbol. This is called the Free Standing Code Number (FSCN). It is preferred that the FSCN appear in the upper right-hand corner on 4 sides of the shipping container in characters 2 inches high or higher, or, on smaller shipping containers, as near this preferred size as possible. This data is supplied in enlarged format for people who must read it from a distance in warehouse and receiving applications.

Smaller Shipping Containers—If the container is not of sufficient size to accommodate the FSCN code on all 4 sides, it may be placed on the two side panels only. Where the two side panels are not sufficiently high enough or long enough to accommodate the bar code symbol and FSCN, the FSCN could be reduced in size to allow the printing of that code in the upper right-hand corner of the two side panels or, if this is not feasible, then the FSCN should be placed on the top of the shipping container.

At the manufacturer's option, the 14 digit human readable code beneath the symbol may be eliminated. When this option is elected by the manufacturer, the FSCN *must* be printed in the upper right-hand corner. The FSCN may be printed in line or it may be separated into two parts and stacked. Example of FSCN printed in line:



BEARER BAR

The symbol's bearer bar serves two purposes. It reduces the probability of a misread when a skewed scanning beam enters and/or leaves the symbol through the top or bottom edge, and provides printing plate support at critical areas when printing directly on corrugated packaging material with conventional "wet ink" printing processes.

If the symbol is not printed directly on the corrugated packaging material using conventional printing processes, the bearer bar should be a minimum of two (2) times the width of a narrow element and need only appear at the top and bottom of the symbol (butting directly against the top and bottom of the symbol bars). The bearer bar need not extend into the clear area nor is it necessary to print the vertical portion of the bearer bar. Example:



0 00 12345 67890 5

When printing directly on the corrugated packaging material with conventional printing processes, the nominal width of the bearer bar is 0.19 inch (4.8 mm) and must completely surround the symbol (as shown in Figures 5, 7 and 9 through 12).

Rounded corners may be utilized on the bearer bar if the film manufacturer can supply such a feature.

CLEAR AREA

The symbol dimensions given in figures 7 through 12 provide ample clear area considering normal printing variations. Minimum clear area is given in Tables 1 and 2 on page 19.

It is important for the operation of the scanning equipment that adequate clear area is maintained.

SYMBOL LOCATION (FIXED CONTENT)

The symbol should be printed on the lower portion of all 4 vertical sides of the loaded container sitting on its natural bottom as illustrated in Figure 2 (page 10). If the shipping container is not of sufficient size to accommodate the UPC on 4 sides, the symbol may be placed on the two long side panels only.

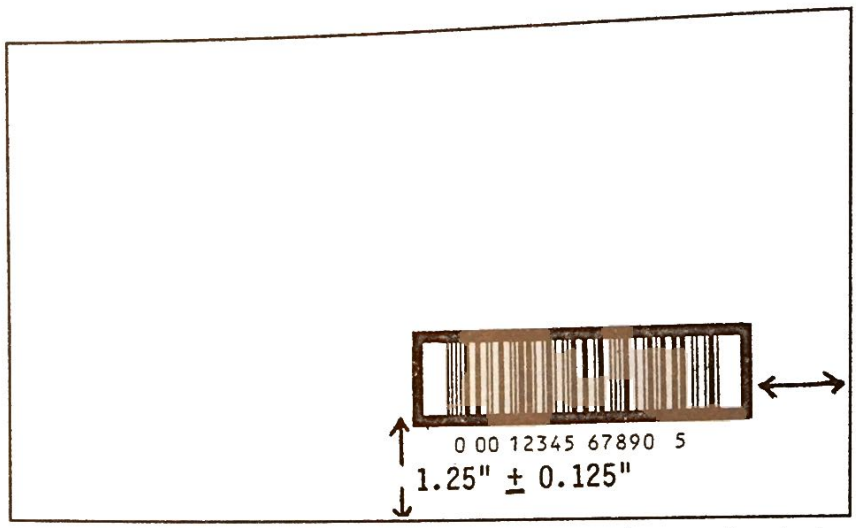
If the symbol is not preprinted on the carton, and a label or on-line printing process is used, the symbol may be placed on one side panel only.

These locations provide a consistent positioning for the symbol in relation to the surface of a conveying system. Specific recommendations:

1. The symbol for fixed content shipping containers should be located as shown in Figure 2, Page 10.
2. The symbol shall be printed in a vertical bar configuration (as a picket fence).
3. The dimension from the bottom edge of the symbol's bars to the bottom plane of the erected case is 1.25 inch (31.8 mm) ±0.125 inch. If it is impossible to maintain this positioning accuracy, longer bars may be employed in order to ensure that a readable symbol is presented to the scanner. This is illustrated in Figure 3. In this case, all of the symbol's bars must protrude downward through a line that is 1.25" (31.8 mm) above the bottom edge of the carton, and upwards through a line that is 1.25" x the symbol's magnification above the lower line.
4. Clearance from the ends of the clear areas to the edges of the container should be at least 0.75" (19.0 mm), see Figure 2, Page 10.

   Note—For very small packages, it might not be possible to allow 0.75" clearance from the clear area to the edges of the container, even when using a 62.5% magnification factor. In these cases, the clear areas may be closer to the edges than 0.75", but in no cases may the clear areas be infringed. Readability will suffer if clear areas are not maintained.

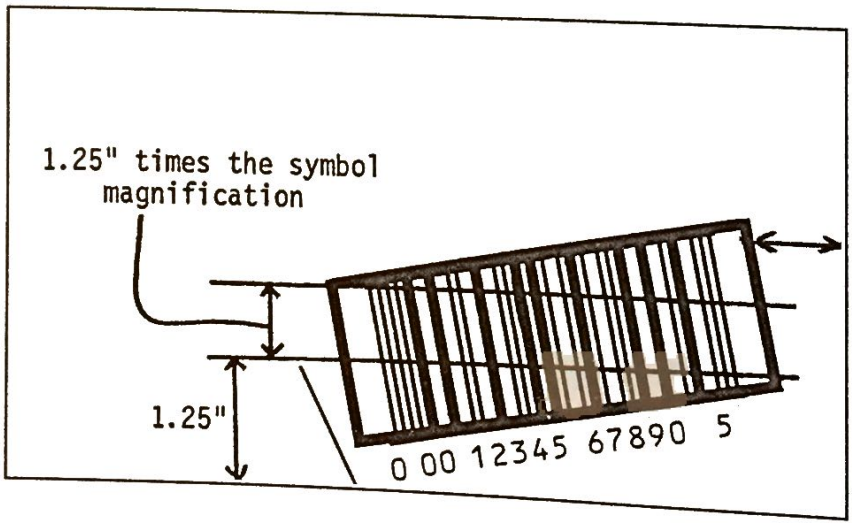
SYMBOL LOCATION FOR FIXED CONTENT SHIPPING CONTAINERS



The clear area of the symbol must be no closer than 0.75" from the edge of the container.

(1.25" dimension = bottom of vertical symbol bars to bottom of carton)

FIGURE 2



The clear area of the symbol must be no closer than 0.75" from the edge of the container.

FIGURE 3

(Bottom of Vertical Symbol Bars)

PRINTING THE CODE

The UPC specification calls for the human readable UPC Shipping Container Code to be printed below the UPC Shipping Container Symbol. This is explained in this manual. the human readable code also appears on the upper side panels of most shipping cases in larger numbers for easy recognition by humans.

The specification for printing the human readable code on the upper side panels follows:

1. The entire 14-digit human readable code should always be printed.
2. The human readable code should be placed in the upper right-hand corner on 4 sides of the shipping container, in figures 2 inches high or higher, or, on smaller cases, as near this preferred size as possible.

The number system character and manufacturer identification number may be imprinted above the item identification number or they may be in line with the item identification number (separated by a hyphen). These numbers may be in slightly smaller print, different color, or in reverse print versus the item number and modulo check digit.

Where the two side panels are not high enough or long enough to accommodate the UPC symbol and code, the human readable code could be reduced in size to allow the printing of that code in the upper right-hand corner of the two side panels or, if this is not feasible, then the human readable code should be placed on the top of the shipping container.

On all generic, small, preprinted and film wrapped containers, the human readable code should be printed on the two side panels only.

SPECIAL APPLICATIONS

A. When shipping units of warehouse stock are unitized and film wrapped for shipment to the customer's location, a scannable UPC shipping container symbol and code is placed on one side of the unit, near the top for ease of scanning. It would be the UPC shipping container symbol and code which uniquely represents the unit load.

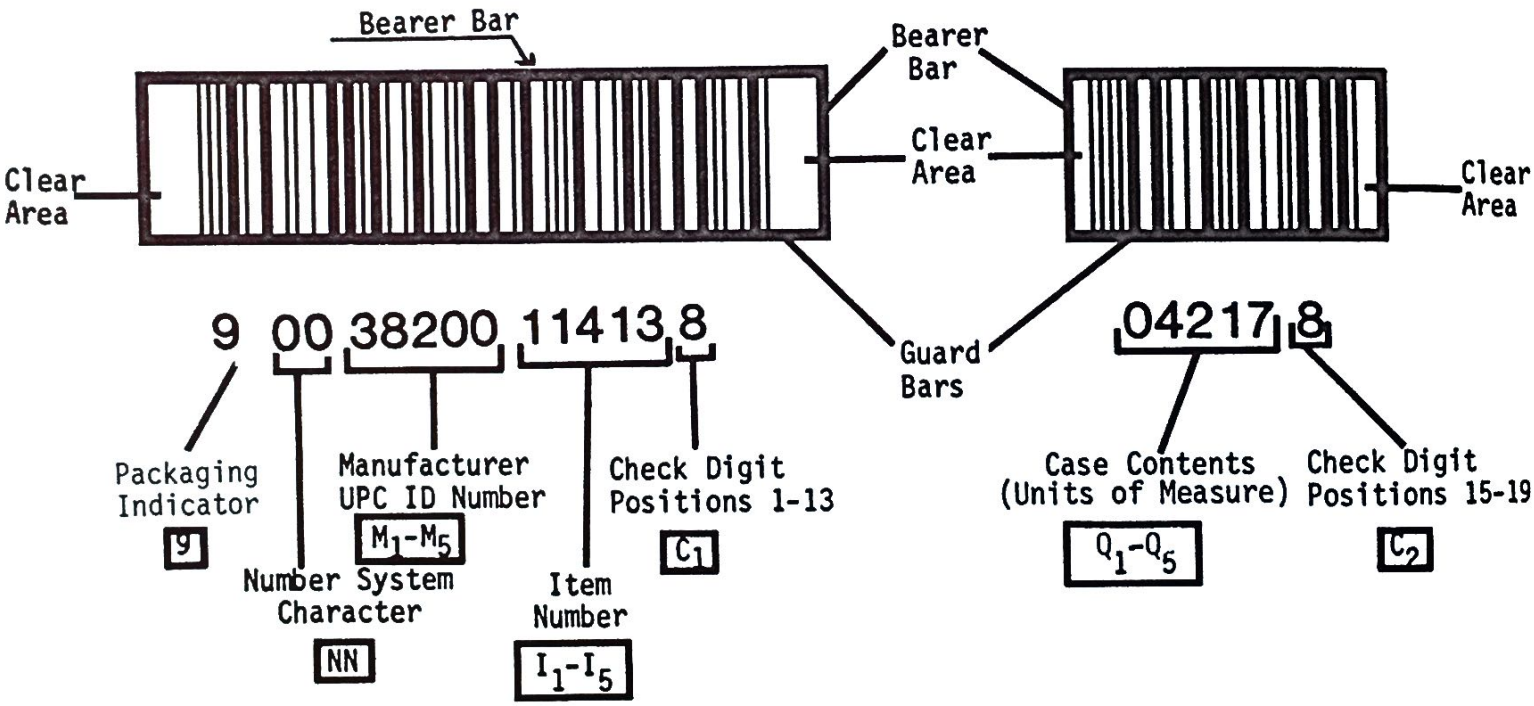
B. Different types of construction used for shipping containers (e.g., asphalt-lined versus ordinary paperboard) need not be identified with more than one UPC shipping container code unless the retailer is expected to specify the container type on reorder.

C. Shipping units such as shrink-wrapped palletized loads (with no shipping cartons), or display setups included in the shipment, may carry a unique UPC shipping container code to distinguish that unique put-up from normal containers.

SHIPPING CONTAINER CODE FORMAT
VARIABLE CONTENT PRODUCTS

[9]	= Packaging Indicator
[NN]	= Number System Characters
[M_1–M_5]	= Manufacturer UPC Identification Number
[I_1–I_5]	= Item Number
[Q_1–Q_5]	= Case Contents in Units of Measure
[C_1]	= Check Digit for Positions 1-13
[C_2]	= Check Digit for Positions 15-19

FIGURE 4
Bar Code Symbol Representations



(Human Readable Characters in OCR-B Font)

Many products (e.g., fresh meat, produce, cheese, fish, poultry items, liquids and solid materials) are sold on a price per unit of measure basis and, therefore, require a different method of identification than that used for items sold on a price per unit basis. These items are referred to as variable content products because the quantity varies from shipping container to shipping container.

The symbology used on shipping containers for products sold at retail on a price per pound basis encodes 20 digits as shown on the preceding page. This same methodology is used for products sold by other units of measure than pounds.

PACKAGING INDICATOR (P.I.)

The PI is always nine (9) for variable content shipments.

NUMBER SYSTEM CHARACTERS (NN)

The two digit number system character is always the number system character of the manufacturer's UPC identification number preceded by a zero (0); i.e., 00, 03, 06, 07. There is one exception in the grocery industry where retailers may request suppliers to continue to use 02.

MANUFACTURER IDENTIFICATION NUMBER (M_1-M_5)

Is always the manufacturer's UPC identification number.

SHIPPING CONTAINER ITEM NUMBER (I_1-I_5)

The item number is a 5-digit number which represents the product. As most variable content items are shipped in bulk (i.e., not in the final retail form) or, if in retail form are intended to be symbol marked at store level, no *consumer unit* item numbers are involved.

Some industries have established standardized 4-digit variable content consumer unit item codes. A shipping container code item number conforming to the standard item code may be used if the manufacturer desires to do so. In such cases, a zero must be inserted ahead of the four digit code. It is also acceptable for the manufacturer of standard item coded products to assign case code item numbers different from the standardized numbers.

SHIPPING CONTAINER CONTENTS—UNITS OF MEASURE (Q_1-Q_5)

The contents code is intended to be expressed in terms of units of measure of the shipping container item number. *There will be only one unit of measurement per shipping container item number.* The unit of measure could be weight in pounds or kilos, gallons, square yards, etc.

Since the unit of measurement is not part of the code, unit of measurement information will be part of the product file record stored in the computer. The unit of measurement must be communicated by the manufacturer or processor company to their customers together with the identification number and characteristics of the shipping container.

The location of the decimal point in the shipping container contents is not standardized. It is the responsibility of the shipper to advise the receiver of placement of the decimal point for each item number.

CHECK DIGIT FOR POSITIONS 1 THROUGH 13 (C_1)

The check digit algorithm is shown in Appendix B. Calculate C_1 from the numerical values in positions 1-13.

The check digit has a control function which is necessary to ensure accuracy.

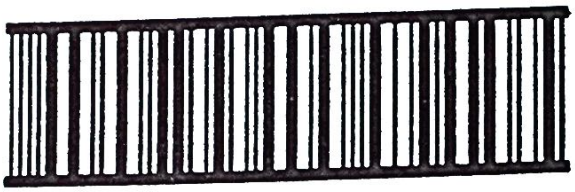
CHECK DIGIT FOR POSITIONS 15 THROUGH 19 (C_2)

Use the algorithm shown in Appendix B. Calculate only from digits Q_1, Q_2, Q_3, Q_4, and Q_5.

BEARER BAR

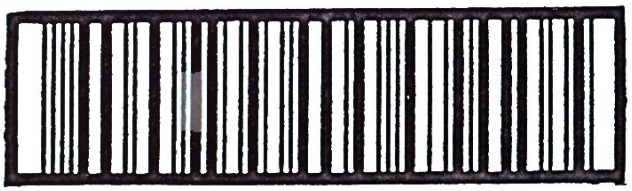
The symbol's bearer bar serves two purposes. It reduces the probability of a misread when a skewed scanning beam enters and/or leaves the symbol through the top or bottom edge, and provides printing plate support at critical areas when printing directly on corrugated packaging material with conventional "wet ink" printing processes.

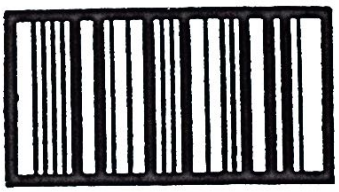
If the 14 digit symbol is not printed directly on the corrugated packaging material using conventional printing processes, the bearer bar should be a minimum of two (2) times the width of a narrow element and need only appear at the top and bottom of the symbol (butting directly against the top and bottom of the symbol bars). The bearer bar need not extend into the clear area nor is it necesary to print the vertical portion of the bearer bar. Example:



When printing the 14 digit symbol directly on the corrugated packaging material with conventional printing processes, the nominal width of the bearer bar is 0.19 inch (4.8 mm) and must completely surround the symbol (as shown in Figure 9 and Appendix E).

Rounded corners may be utilized on the bearer bar if the film manufacturer can supply such a feature. The six-digit symbol does *not* require the bearer bar if printed on a label; it does require a bearer bar if printed directly on the packaging material using conventional printing techniques. The nominal width of the bearer bar is 0.19 inch (4.8 mm), and must completely surround the symbol. Example:





If the primary and add-on symbols are printed at different times (i.e., primary symbol preprinted, suffix symbol added later) and a bearer bar used around each symbol, the distance between bearer bars may be minimal (no specified distance). If desired, the vertical portions of the bearer bars may overlap. Example:

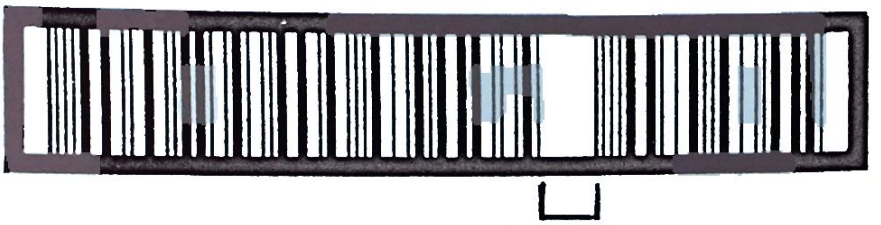


SEQUENCE

When the container is resting on it's natural bottom, the 6 digit symbol shall appear to the right of the 14 digit symbol.

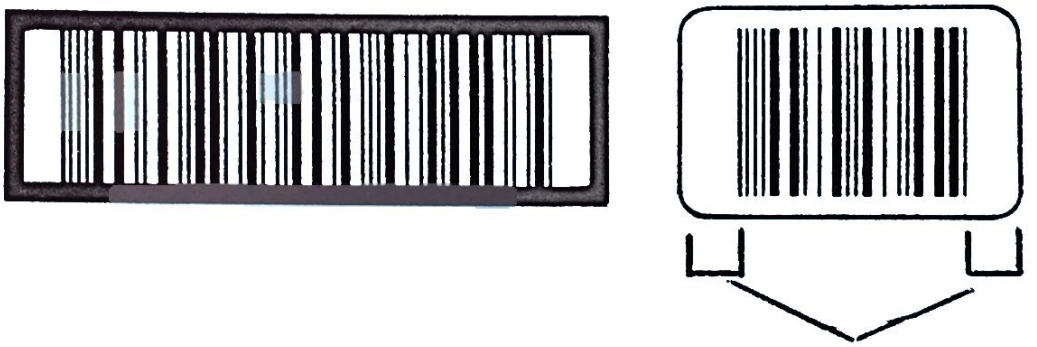
CLEAR AREAS

When both symbols are printed on the same substrate (both directly on the carton or both symbols printed on a single label), the trailing clear area of the first symbol and the leading clear area of the second symbol can become one single clear area with minimum width as specified in tables 1 or 2. In this instance, one continuous bearer bar may be used. Note that if different magnifications are employed for the two symbols, the clear area must be large enough to meet the requirements of the larger symbol with the largest magnification. Example:



Clear Area

When a separately applied symbol is used for either symbol, valid clear areas must exist from the edge of the label to the symbol's bars:



Clear Area

HUMAN READABLE INFORMATION

On variable content shipping containers, all digits, including check digits, are shown in human readable form.

When both the 14 digit symbol and the 6 digit symbol have been preprinted, the following applies to the human readable characters:

The characters are formatted with spaces to enhance readability on the first symbol as follows:

Separate position 1 and position 2 with 1 space.

Separate position 3 and position 4 with 1 space.

Separate position 8 and position 9 with 1 space.

Separate position 13 and position 14 with 1 space.

On the second symbol, separate positon 19 and position 20 with one space.

The human readable characters beneath the preprinted symbol have the following nominal character dimensions:

Overall height	0.23 inch (5.8 mm)
Typical overall width	0.14 inch (3.6 mm)
Stroke width	0.03 inch (0.76 mm)

Character centerline spacing (pitch) is 0.180 inch (4.57 mm). The size and spacing of characters remains the same for different horizontal magnifications.

The human readable characters *on separately applied labels* must have a character height of at least 0.2 inch (5 mm) to facilitate readability. The human readable characters on separately applied labels for random weight shipping containers are to be arranged below the bar code.

The quantity figure may be printed to the right side of the manufacturer/item figures, or immediately below them.

SYMBOL LOCATION (VARIABLE CONTENT)

For variable content shipping containers, the symbols are placed on only 1 vertical side of the container. This location provides a consistent positioning for the symbol in relation to the surface of a conveying system. Specific recommendations:

1. The symbol should be located as shown in Figure 5. Two complete and separate bar code symbols printed in the vertical bar configuration are required. The first (left most) symbol consists of a leading clear area, a start character, encoded digits for positions 1 through 14, a stop character and a trailing clear area. The second (right most) symbol consists of a leading clear area, a start character, encoded digits for positions 15 through 20, a stop character and a trailing clear area. The two symbols are positioned on the shipping container as shown in Figure 5 which follows:

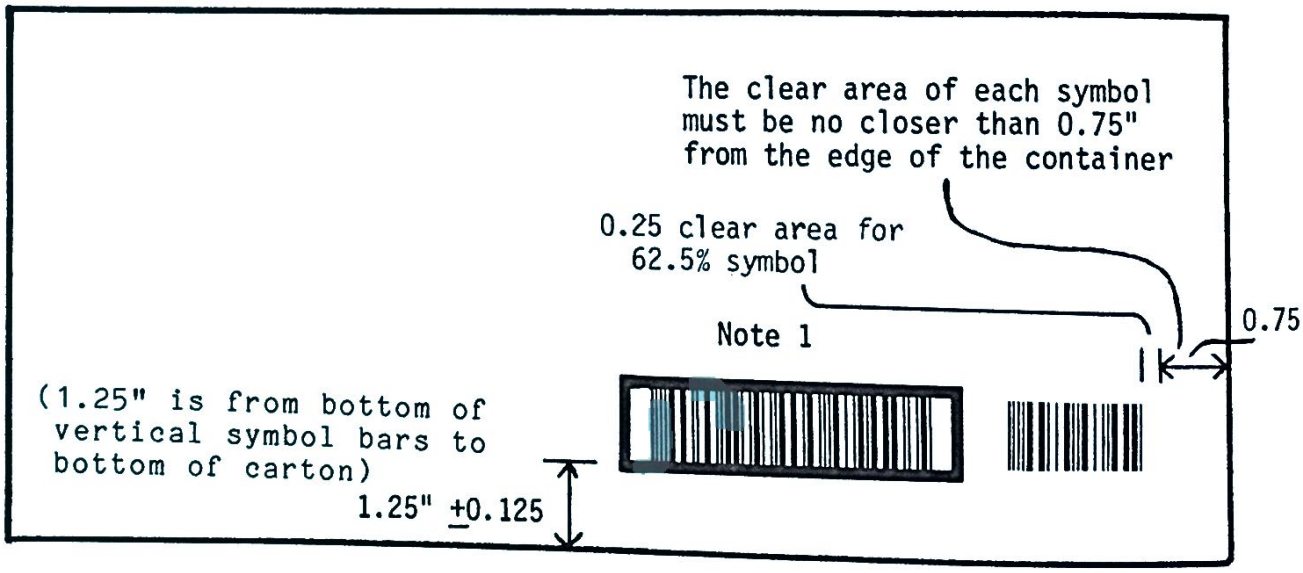


FIGURE 5

Note 1: The horizontal part of the bearer bar is mandatory on primary (14-digit) symbols regardless of the printing process (label or printed directly on the packaging material). See page 14, Bearer Bar, for information regarding its use. The bearer bar is mandatory on direct printed six-digit symbols. If the six-digit symbol is printed on a label, a clear area must be maintained between the symbol and any label edge as shown on page 15.

2. The dimension from the bottom edge of the symbol's bars to the bottom edge of the carton is 1.25 inch (31.8 mm) ±0.125 inch. If it is not possible to maintain this positioning accuracy, longer bars may be employed in order to ensure that a readable symbol is presented to the scanner. This is illustrated in Figure 6 (below). In this case, all of the bars of each symbol must protrude downward through a line that is 1.25 inch (31.8 mm) above the bottom edge of the carton. All bars of the 14 digit symbol must protrude upward through a line that is 1.25 inch times the symbol's magnification above the lower line. All bars of the six digit symbol must protrude upwards through a line that is 0.8 inch above the lower line.

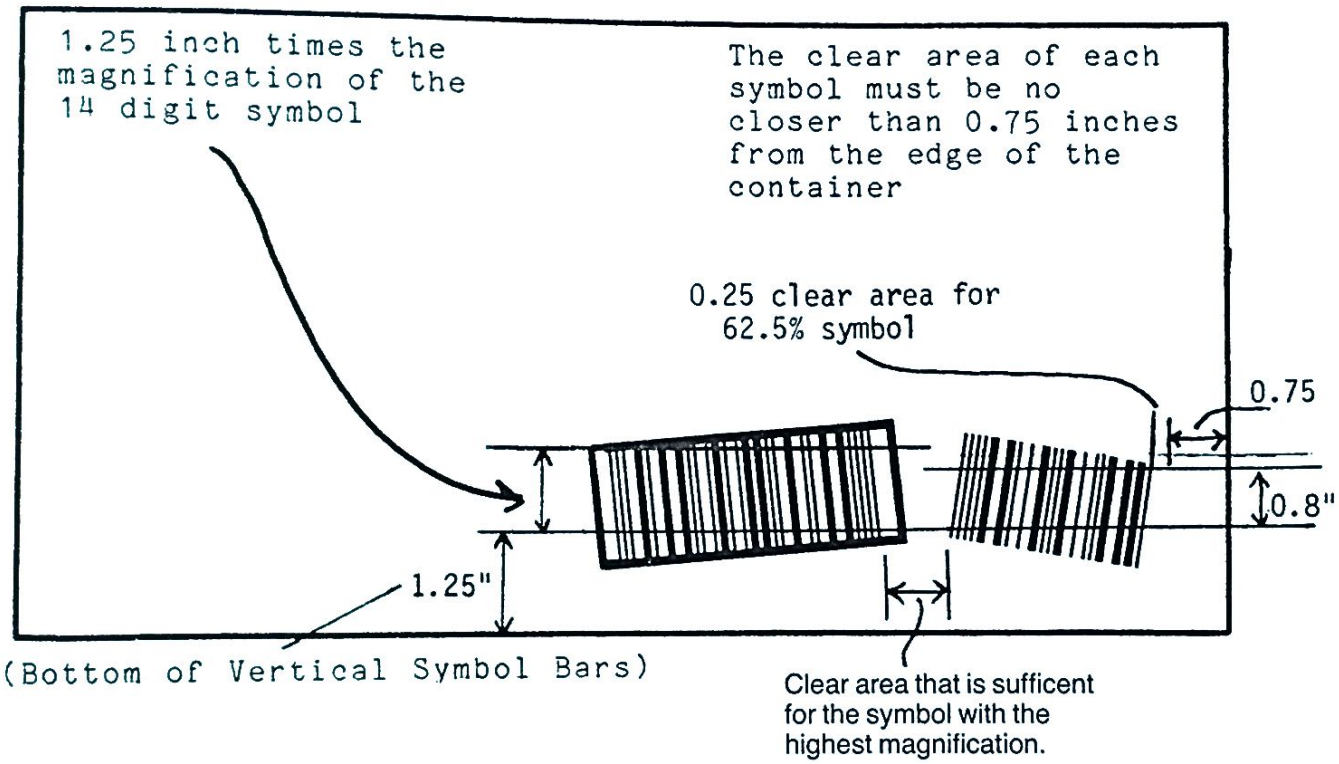


FIGURE 6

PRINTING THE CODE

In most cases, a human readable representation of the Variable Content Shipping Container Code will be printed in conjunction with the UPC Variable Content Shipping Container Symbol.

When appearing by itself, the code is to be printed with all 20 characters, hyphenated as shown in the following example:

$9N_1N_2\text{-}M_1M_2M_3M_4M_5\text{-}I_1I_2I_3I_4I_5\text{-}C_1\text{-}Q_1Q_2Q_3Q_4Q_5\text{-}C_2$

The code is to be printed in figures 2 inches high or more, or, on smaller cases, as near this preferred size as possible, in the upper right-hand corner on one side of the shipping container.

The content figures may be printed to the right side of the manufacturer/item figures, or immediately below them.

3.0 DIMENSIONS AND TOLERANCES IN THE PRINTED SYMBOL — FIXED CONTENT AND VARIABLE CONTENT

GENERAL DIMENSIONS

Dimensions of the 14-digit symbol at standard magnification are given in Figure 7. This symbol corresponds to a magnification of 1.0. The symbol is shown with a completely enclosing bearer bar which is suitable for *direct printing on corrugated* using conventional techniques.

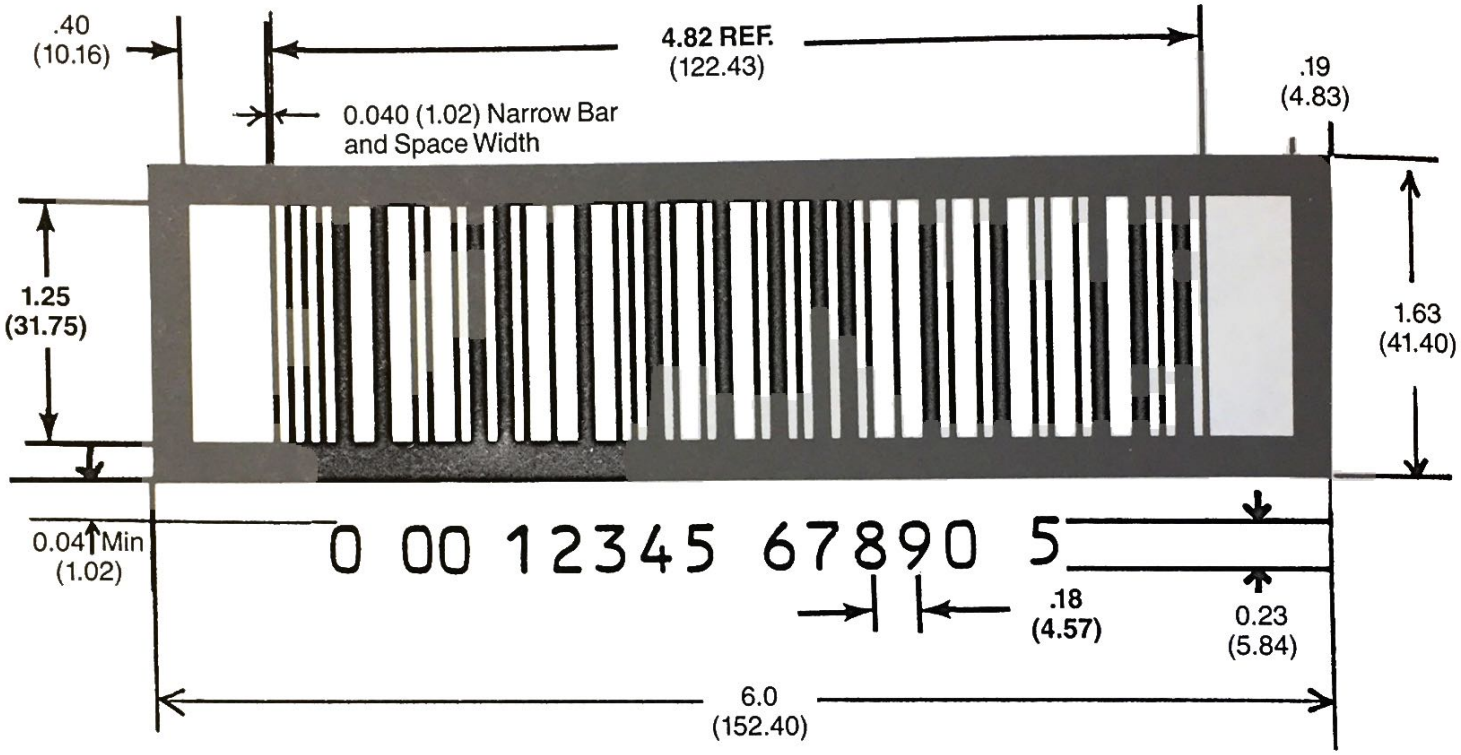


FIGURE 7
SYMBOL DIMENSIONS — STANDARD MAGNIFICATION (1.0)
INCHES & (mm)
NOT DRAWN TO SCALE

MAGNIFICATION

Figure 7 specifies the dimensions of the 14 digit symbol when printed at a magnification of 1.0. Both the 14 digit symbol and the six digit symbol may be printed with a magnification in the allowable range of 0.625 to 1.20. See Appendix E for additional reference drawings.

Note that as magnification factors decrease below 1.0, they become increasingly difficult to print within specification directly on corrugated materials using conventional printing techniques. IT IS RECOMMENDED THAT SYMBOL MAGNIFICATIONS OF 1.0 OR GREATER BE EMPLOYED WHEN DIRECTLY PRINTING ON CORRUGATED.

NOTE: Based on results of a 1989 corrugated industry study by the Fibre Box Association on bar width variability, it was concluded that it is not currently feasible to print the 0.625 magnification factor of the shipping container bar code symbol directly on corrugated board within the dimensional specification of ± .005 inches tolerance using conventional techniques. Magnification factor 0.70 is recommended as the EFFECTIVE MINIMUM when printing directly on corrugated.

SYMBOL DIMENSIONS AND TOLERANCES

When printed with a symbol magnification of 1.0, the narrow bars and spaces have a width of 0.040 inches (1.02 mm), and the wide bars and spaces have a width of 0.100 inches (2.54 mm). For all magnifications, the nominal ratio between the widths of wide and narrow elements is 2.5.

The maximum allowable printing tolerance for the width of any bar or space is equal to ±0.012 inches times the symbol magnification, *but* no element may be printed with a width of less than 0.020 inches.

The minimum clear area is equal to 10 times the width of a nominal narrow element. The minimum bar height for 14 digit symbols is 1.25 inches times the symbol's magnification factor.

Table 1 contains the bar and space widths, tolerances, minimum bar height, and minimum clear area width for the recommended range of magnifications. Table 2 contains the same data expressed in metric units.

Table 1 (inches)

Magnification Factor	Narrow Bar or Space Width	Wide Bar or Space Width	Bar or Space Width (±t) Tolerance	Minimum Clear Area Width	Minimum Bar Height**
1.20	0.048	0.120	0.014	0.48	1.50
1.10	0.044	0.110	0.013	0.44	1.38
1.00	0.040	0.100	0.012	0.40	1.25
0.90	0.036	0.090	0.011	0.36	1.13
0.80	0.032	0.080	0.010	0.32	1.00
0.70	0.028	0.070	0.008*	0.28	0.88
***0.625	0.025	0.063	0.005*	0.25	0.78

*Note that even with the tolerances shown above, no element may be printed with a width of less than 0.020 inches.
**For 14 digit symbols; note the minimum bar height for six digit symbols is also 0.78 inches.
***The 0.625 magnification factor is recommended *only* for printing upon label stock and *not* for printing directly on corrugated.

Table 2 (metric in mm's)

Magnification Factor	Narrow Bar or Space Width	Wide Bar or Space Width	Bar or Space Width (±t) Tolerance	Minimum Clear Area Width	Minimum Bar Height**
1.20	1.219	3.048	0.356	12.2	38.10
1.10	1.118	2.794	0.330	11.2	35.05
1.00	1.016	2.540	0.305	10.2	31.75
0.90	0.914	2.286	0.279	9.1	28.70
0.80	0.813	2.032	0.254	8.1	25.40
0.70	0.711	1.778	0.203	7.1	22.35
***0.625	0.635	1.588	0.127	6.4	19.81

*Note that even with tolerances above, no element may be printed with a width of less than .508 mm.
**For 14 digit symbols. Note — the minimum bar height for six digit symbols is also 19.81 mm.
***The 0.625 magnification factor is recommended *only* for printing upon label stock and *not* for printing directly on corrugated.

4.0 FILM MASTERS

Bar code symbols require a precise film artwork to manufacture printing plates. This precise film artwork is called a film master.

Consistent with the UPC practice of allocating 5 percent of the nominal (0.013 module) printed bar width tolerance to the film master, a film master tolerance of ±0.0005 inches (0.0127 mm) is applied to the individual bar and space measurements. Other dimensions shown in Figures 7 through 14 should be held to ±.005 inch (0.127 mm) for dimensions less than 2 inches and ±.01 inch (0.254 mm) for dimensions greater than 2 inches.

5.0 LABELS

If separately applied labels are used for any of the symbols, adequate clear area must be present between the label edge and the start or stop codes. Horizontal bearer bars (minimum width is twice the width of a narrow element) are required on 14 digit symbols only.

The human readable characters on separately applied labels must have a character height of at least 0.2 inches (5 mm) to facilitate readability. The human readable characters on separately applied labels for variable content shipping containers are to be arranged below the bar code.

6.0 PRINT CONTRAST

Operation of scanners depends on recognition of the contrast between dark and light areas of the symbol. The effective contrast can be affected by many factors, which are described in this section. As indicated below, these factors can be measured. Many printers have equipment to make such measurements.

6.1 REFLECTANCE FACTOR

(R) is the ratio of reflected flux 0_r to the reference reflected flux 0_{rs}. Reflected flux is the radiant power reflected by the sample and evaluated by a specified kind of receiver. Reference reflected flux is the radiant power reflected by a magnesium oxide or varium sulfate photometric standard, with the same photometric conditions used to measure flux reflected from the sample.

The incident illumination shall be centered at 45% to the normal to the sample and the reflected flux shall be collected by a receiver subtending a small solid angle at the sample and centered on the normal to the sample. The sampling aperture shall be a circular area with a minimum diameter of 0.008 inch and a maximum diameter of 0.022 inch.

Because corrugated surfaces vary from point to point in reflectivity, several measurements should be made on these materials to establish a reasonable estimate of the lowest reflectance from the light background (or spaces) and the highest reflectance within the printed bars.

The sample shall be illuminated by light having the spectral power distribution of a commercial approximation to CIE source A which is realized by a gas-filled coiled tungsten filament lamp operating at a correlated color temperature of 2856K.

The photometric receiver of reflected flux shall have a relative spectral sensitivity characterized by a photomultiplier with an S-4 response as specified by the Joint Electron Devices Engineering Council, used with a Wratten 26 filter, meeting nominal specifications.

6.2 BACKGROUND REFLECTANCE

The reflectance factor of the light background (spaces and clear areas) shall be at least 25 percent.

6.3 PRINT CONTRAST SIGNAL

(PCS) is defined by the relationship:

$$PCS = \frac{R_L - R_D}{R_L}$$

Where R_L is the reflectance factor of the light background (or spaces) and R_D is the reflectance factor of the dark bars.

The minimum allowable value of PCS is 75 percent.

Table 3 illustrates the maximum bar reflectance R_D as a function of background reflectance R_L.

Table 3
Reflectance and PCS

Minimum "Light" Background Reflectance R_L – Percent	Maximum Bar Reflectance R_D – Percent
80	20.00
75	18.75
70	17.50
65	16.25
60	15.00
55	13.75
50	12.50
45	11.25
40	10.00
35	8.75
30	7.50
25	6.25

7.0 COLOR AND INK GUIDELINES

Any combination of ink and substrate that will yield the reflectance and print contrast specified in Sections 6.1, 6.2, and 6.3 is acceptable.

As a general guide to ink selection, those inks which appear darkest when viewed through a Wratten 26 filter will provide the best contrast. *Red and orange inks should not be used for printing the symbol.*

Testing by the Distribution Symbology Study Group suggests that the following colors (GPI Edition VII Natural published by the Glass Packaging Institute, 6845 Elm Street, Suite 209, McLean, VA 22101) may yield acceptable contrast when printed on corrugated liner boards with symbol magnification 1.0 or greater.

Color (GPI)

3213	Aqua
90	Black
31	Blue
32	Blue
33	Blue
38	Blue
39	Blue
300	Blue
387	Blue
394	Blue
3086	Blue
52	Brown
523	Brown
20	Green
21	Green
22	Green
24	Green
29	Green
2008	Green
2014	Green

This does not mean that all inks with these GPI designations will give acceptable values, as the reflectance will depend on the specified ink formulation. Reflectance values must be determined as defined in the Sections 6.1, 6.2, and 6.3.

Although natural kraft-linerboard looks relatively dark to the human eye, its reflectance values when measured with a light of 633 nm wavelength are sufficiently high to be used as a substrate for scannable codes when used with properly applied inks. Lighter color substrates, such as mottled and bleached linerboards, will provide even higher reflectance values, which may allow selection of a broader range of colors than those shown above.

8.0 CONTROL MECHANISMS

Presence sensing and/or other scan field control should be applied so as to minimize the likelihood of the reader being in a mode capable of recognizing a six digit length symbol during the time when a longer Primary Symbol is in the active scan field. In addition, wherever possible the scanner or control device should be programmed to recognize primary and Add-On Symbols only in their proper sequence, as determined by direction of travel.

This technique depends upon the ability to "custom tune" the reader. Users must work closely with their equipment vendors to arrive at a satisfactory set-up. Also, care must be taken during ongoing maintenance of the equipment to assure that critical alignments are not disturbed.

Note that this guideline relates primarily to conveyor-based automatic laser scanning readers. Similar measures should also be used with hand-held readers (both manual and automatic). Here, operators should be trained to scan only the symbol to be acquired and to make best efforts to direct the scan beam or wand trajectory through the entire symbol, avoiding entering or leaving the bar pattern through its upper or lower edges.

APPENDIX A

UPC SHIPPING CONTAINER CODE CONFIGURATION INTERLEAVED 2 OF 5

Each data character is composed of 5 elements, 2 of which are wide and 3 of which are narrow. Wide elements are assigned a binary value of 1 and narrow elements are assigned a value of 0. Table 1 shows the code symbology for characters 0 through 9.

Table 1
Interleaved 2 of 5 Code Symbology

Character	Code
0	00110
1	10001
2	01001
3	11000
4	00101
5	10100
6	01100
7	00011
8	10010
9	01010

The start and stop characters are encoded as follows:

Start character (bars)	00
Stop character (bars)	10

The spaces embedded in both the start and stop characters are narrow. The start character includes a following narrow space.

Within any one symbol all narrow bars and spaces are equal in width. The wide bars and spaces are 2.5 times as wide as the narrow elements.

The characters are interleaved together using the bars to represent data characters occupying the odd positions, starting with the first character after the start character. Even characters are represented in the spaces. This is illustrated in Figure 8. The interleaving process requires an even number of characters.

Following is an interleaved 2 of 5 bar code symbol encoding the characters "3852".

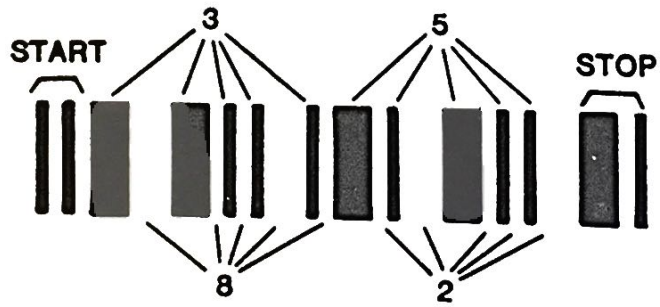


FIGURE 8
INTERLEAVED 2-OF-5 BAR CODE SYMBOL ENCODING "3852"
NOT DRAWN TO SCALE

APPENDIX B

CHECK DIGIT ALGORITHM

Where character positions are numbered from left to right:

STEP 1: Starting with the Packaging Indicator, add all of the characters in the *odd* positions.
(Example number — 0 00 12345 67890)
(Step 1 using the example, 0+0+2+4+6+8+0=20)

STEP 2: Multiply the sum obtained in Step 1 by 3.
(Step 2 using the example, 20×3=60)

STEP 3: Again, starting at the left, add all of the characters in the *even* positions.
(Step 3 using the example, 0+1+3+5+7+9=25)

STEP 4: Add the product of Step 2 to the sum of Step 3.
(Step 4 using the example, 60+25=85)

STEP 5: The modulo-10 check character value is the number which when added to the sum of Step 4 gives the next higher multiple of 10.
(Step 5 using the example, 85+5=90) (Check value is 5)

NOTE: VERIFICATION EQUIPMENT USED TO TEST THE UPC INTERLEAVED 2 OF 5 SHOULD CHECK ALL 14 DIGITS (INCLUDES THE CHECK DIGIT).

APPENDIX C

PRINTING PRACTICES/RECOMMENDATIONS

1.0 PRINTING PLATE PREPARATION

Satisfactory results have been obtained when the plates for the symbol are 25-40 durometer natural rubber, synthetic rubber or photopolymer.

2.0 METAL ENGRAVINGS FOR THE MANUFACTURE OF MOLDED SYNTHETIC AND NATURAL RUBBER PLATES

The Distribution Symbology Study Group — a 1978-82 ad hoc committee of corrugated manufacturers, users, plate makers and scanner manufacturers — evaluated manufacturing techniques of metal engravings which would optimize printing plate quality for bar code printing when employing molded rubber or synthetic materials.

Recommendations that follow presume the use of two printing plate thickness; i.e., 0.250 inch (6.35 mm) and .125 inch (3.18 mm).

2.1 Code graphics should be etched individually or in a flat of code graphics near the middle of the bath.

2.2 The ideal depth between the symbol and bearer bars (clear area and other figures) should range from 0.065 inch (1.65 mm) to 0.070 inch (1.78 mm).

2.3 The shoulder angle should range from 20 degrees to 25 degrees.

2.4 If topping is removed after etching, care should be taken not to round off the edges on the face of the bars.

2.5 The final etching should be checked for accuracy against the specification with the use of a minimum 40-power optical instrument by checking various areas of the engraving.

These engraving recommendations are presented as a starting point for testing individual plant operating procedure and to assist in the development of a production specification.

3.0 PHOTOPOLYMER PLATES

Manufacture of photopolymer printing plates is a more precise system than that used in producing rubber plates from metal etched engravings. A photopolymer plate is a close duplicate of the film master and, therefore, is less affected by printing plate manufacturing variances.

3.1 Ideal depth between the symbol and bearer bars (clear area and other figures) should range from 0.065 (1.65 mm) to 0.70" (1.78 mm).

3.2 Shoulder angle should range from 20 degrees to 25 degrees.

3.3 Photopolymer plate should be checked for accuracy against the specification with a minimum 40-power optical instrument at various areas on the plate.

3.4 The single most important element in processing a film negative type with liquid polymer or clear sheet polymer Matte is film density. Emulsion density in the black area should be 4.0 or greater and the density on the clear area 0.5 or less. The clear area image must have high contrast (hard edge).

4.0 PRE-PRESS PROCEDURES

The film master supplier has the capability to reduce all bar widths from the designated dimensions to compensate for printing gain. This reduction in bar widths on the film master is called Bar Width Reduction (BWR).

Tests to determine amount of print gain and BWR for the printer should require at least two steps:

Step 1: Order film masters specifying —

a) Magnification factor.
b) Positive or negative.
c) Right reading emulsion down.
d) Right reading emulsion up.
e) Bar width reduction based on Step 2 below.

After the film masters have been received, make printing plates using standard plate making processes as detailed in the Sections 1.0, 2.0 and 3.0.

Step 2: Different printing processes (flexo, letterpress), as well as press size and press operating practices, may produce small but significantly different bar width print gains. To obtain ideal reproduction of the desired bar size, bar width print gain should be studied for each press operation. Starting with a bar code printing plate of known bar width dimensions, actual bar width print gain should be measured for two or three consecutive runs. The amount of variance from the desired nominal bar width should then be used to adjust the bar width reduction so that the desired bar width can be reproduced on subsequent runs.

If the substrate material and printing process preclude holding the bar width tolerances (Table 1 or 2) for the standard size symbol, a larger horizontal magnification is required.

5.0 PRESS OPERATION

Accurate symbol printing on corrugated board requires proper printing press operation. This section covers some of the general practices that should be followed when printing bar code symbols. The following practices are only recommendations and should not be substituted for first-hand experience.

5.1 PRINTING PLATE MOUNTING

The symbology plate and the remaining printing plates should be premounted on a carrier sheet. The mounting should be preproofed to assure uniform height throughout. Make-ready should be used to elevate low spots. Once a symbology plate is mounted on a carrier sheet, it should be left intact. Removing and remounting can affect the quality and accuracy of the plate.

Printing plates mounted on compressible backing material have provided excellent printed symbols.

5.2 FLEXO PRESS OPERATION

To assure uniform pressure adjustment, both printing and impression cylinders should be clean (free of any ink build-up). All rolls in the printing train should be parallel.

Printing pressures should be adjusted carefully to avoid excessive squeeze or crush. Maintain kiss impression between the anilox roll and printing plate and printing plate to board surface. Printing pressure should be the minimum amount required to transfer the full image to the board surface. Excessive squeeze will cause excessive bar width distortion (growth) or haloing.

The anilox roll should be free of any circumferential damage that might affect ink transfer and show up as excessive striation.

Ink viscosity control is vital to maintain adequate ink coverage and uniform quality throughout the run. Initial viscosity should be high enough to obtain good solid coverage while still maintaining adequate drying for the desired run speed. Avoid ink viscosities that are too high as this will cause excessive ink build-up on the printing plate and possible fill-in between bars.

If excessive bar width growth occurs at high speeds, try printing with a lower viscosity ink. Heavier ink film thicknesses occur on the anilox roll with increased speed and with increased ink viscosity on a two roll (rubber metering roll) fountain. Lower ink viscosity should produce lower ink film thickness.

5.3 LETTER PRESS PRINTING

There are at least three main points requiring attention for successful symbol printing. They are press condition, accompanying printing plates, and ink adjustment. As with flexo printing, minimum plate impression is required so as not to distort the print. Unlike flexo presses, letter press print cylinders are mostly wood or plastic covered. These coverings often are out of round, creating more difficulty in adjusting for minimum plate impression required to obtain the desired bar width dimension. Make-ready should be used to raise low spots in the plate that otherwise would require excessive pressure to obtain full coverage.

Unlike flexo printing, letter presses require different ink film thickness for printing large solids as compared to fine type. Satisfying the heavy ink film requirements of the solids may flood the fine type. (A symbol printing plate would be classified as fine type.) Therefore, it is imperative that the artwork on the box complement the ink required for the symbology plate.

The last press operating procedure that would be desirable to obtain the best results is in the number of form rolls used. To obtain the most uniform coverage, all form rolls should be used.

6.0 CORRUGATED BOARD QUALITY

It should be standard practice to minimize the occurrence of high/low flutes and washboarding. The occurrence of these types of defects can produce unscannable areas within the symbol as noted by irregular bar width when printing on the tip or valley of a flute.

APPENDIX D

TRADE WITH MEMBERS OF THE INTERNATIONAL ARTICLE NUMBERING ORGANIZATION, EAN

1. All companies which use a UPC number on their products should be expected to use the UPC shipping container code and symbol.
2. Companies which are members of EAN numbering organizations will accept the UPC shipping container code and symbol as specified in this manual. No other shipping container code and symbol need be developed for exported goods.
3. Shipping containers source marked according to the EAN shipping container specifications ensure unique identification of products. There are two EAN shipping container code/symbol configurations.
   a. A 14 digit number which is encoded within a 14 character Interleaved 2 of 5 symbol. When designing systems to process this EAN shipping container code number, take into account that *the EAN code number structure may be different from the UPC code number structure.* The EAN and UPC shipping container (bar code) symbol specification are the same.
   b. A 13 digit number encoded with an EAN 13 symbol (as also used on consumer products and intermediate packages).

APPENDIX E

DIMENSIONS OF FIXED AND VARIABLE CONTENT SYMBOLS



FIGURE 9
SYMBOL DIMENSIONS — HORIZONTAL MAGNIFICATION 0.8
INCHES & (mm)
(NARROW BARS AND SPACE WIDTH = 0.032" (0.813 mm)

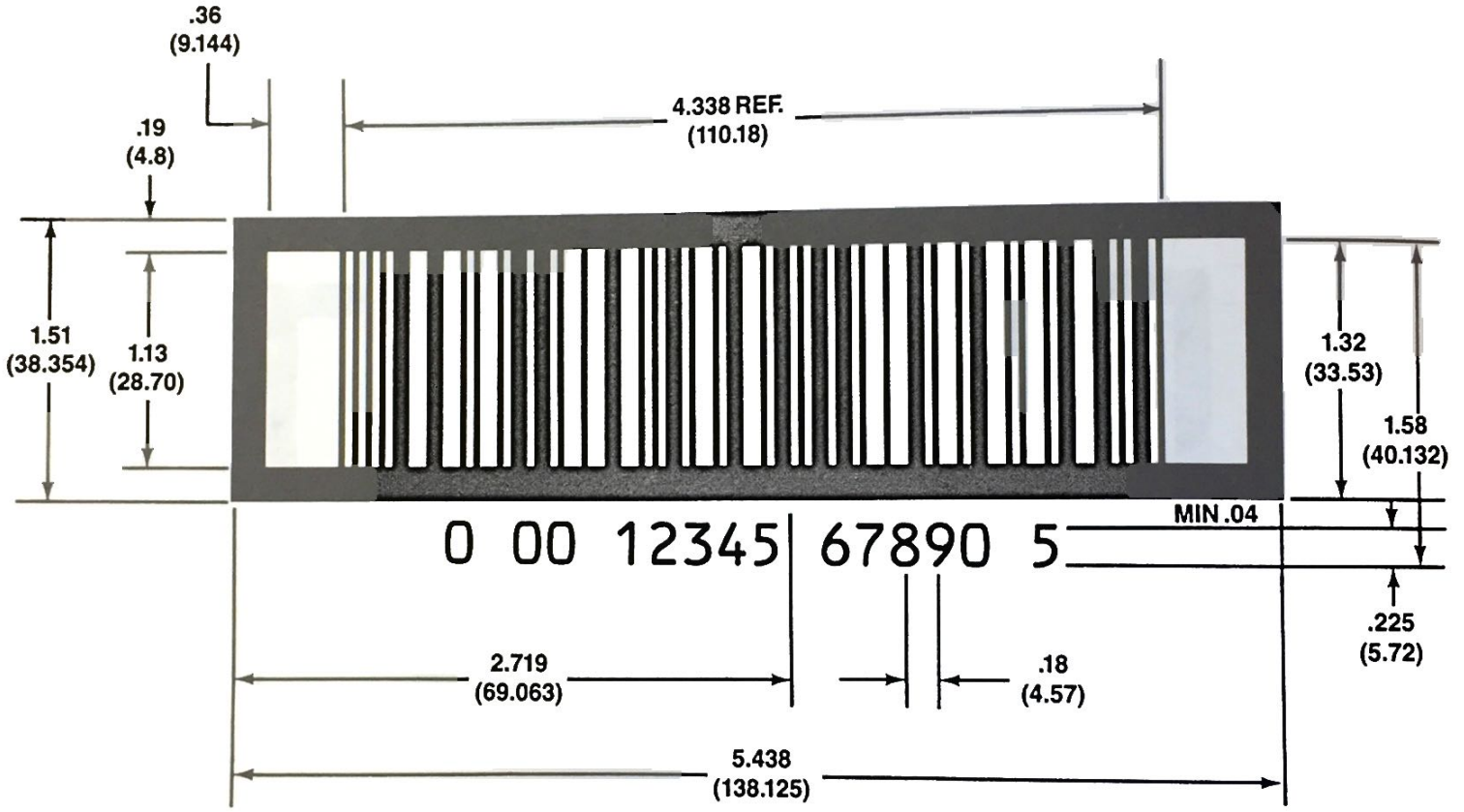


FIGURE 10
SYMBOL DIMENSIONS — HORIZONTAL MAGNIFICATION 0.9
INCHES & (mm)
(NARROW BAR/SPACE WIDTH = .036" (0.914 mm)

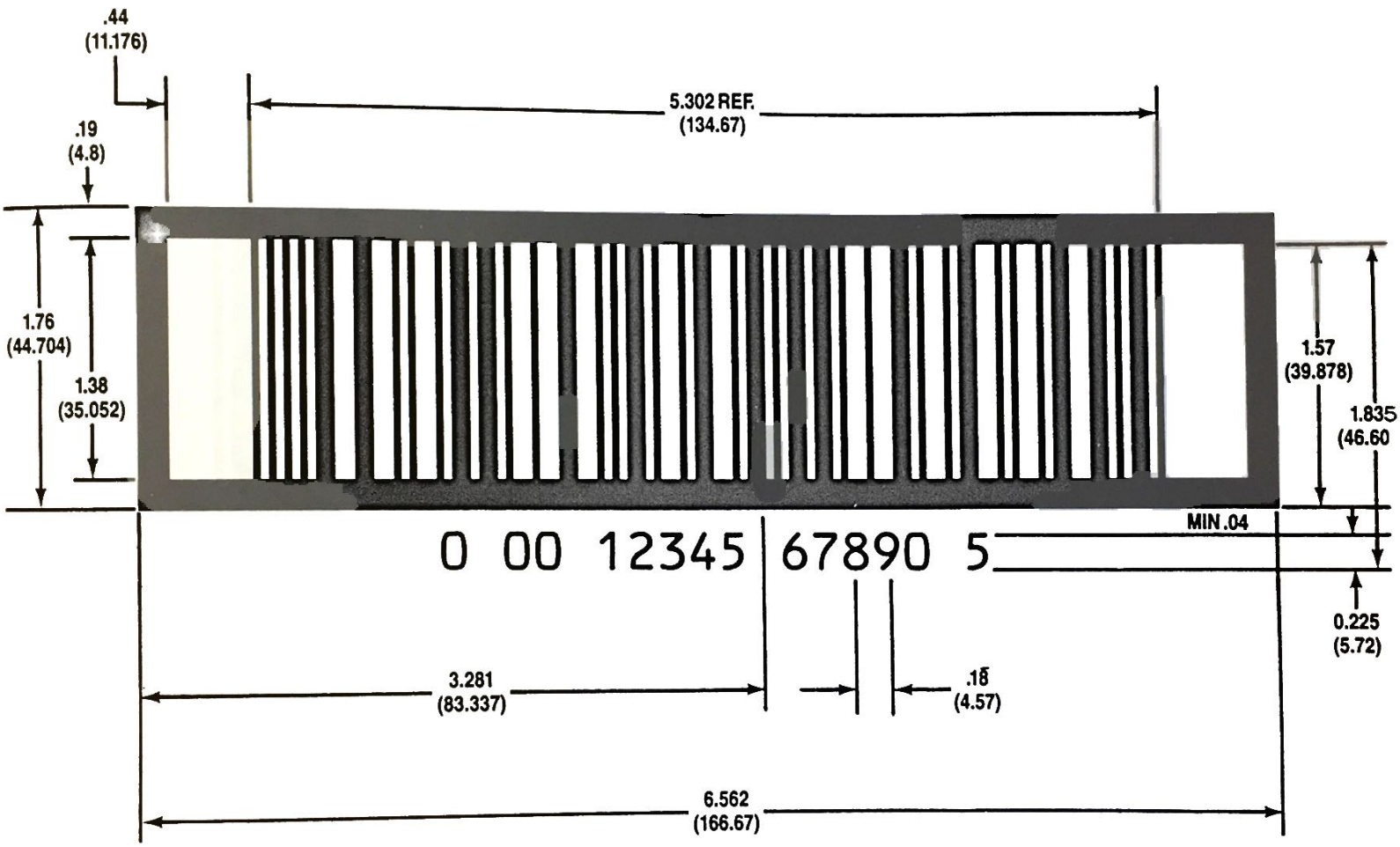


FIGURE 11
SYMBOL DIMENSIONS — HORIZONTAL MAGNIFICATION 1.1
INCHES & (mm)
(NARROW BAR/SPACE WIDTH = .044" (1.118 mm)

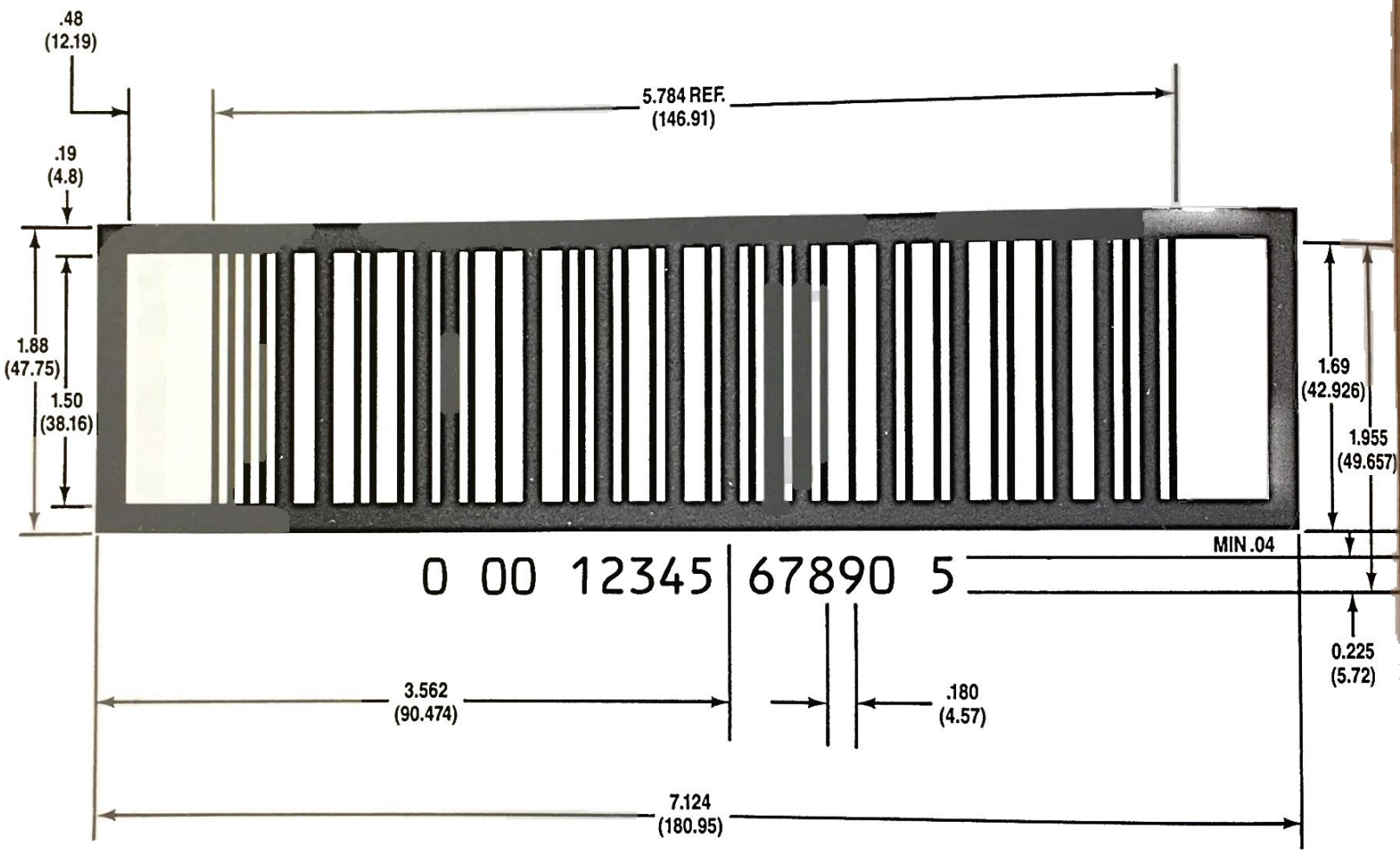


FIGURE 12
SYMBOL DIMENSIONS — HORIZONTAL MAGNIFICATION 1.2
INCHES & (mm)
(NARROW BAR/SPACE WIDTH = .048″ (1.22 mm)

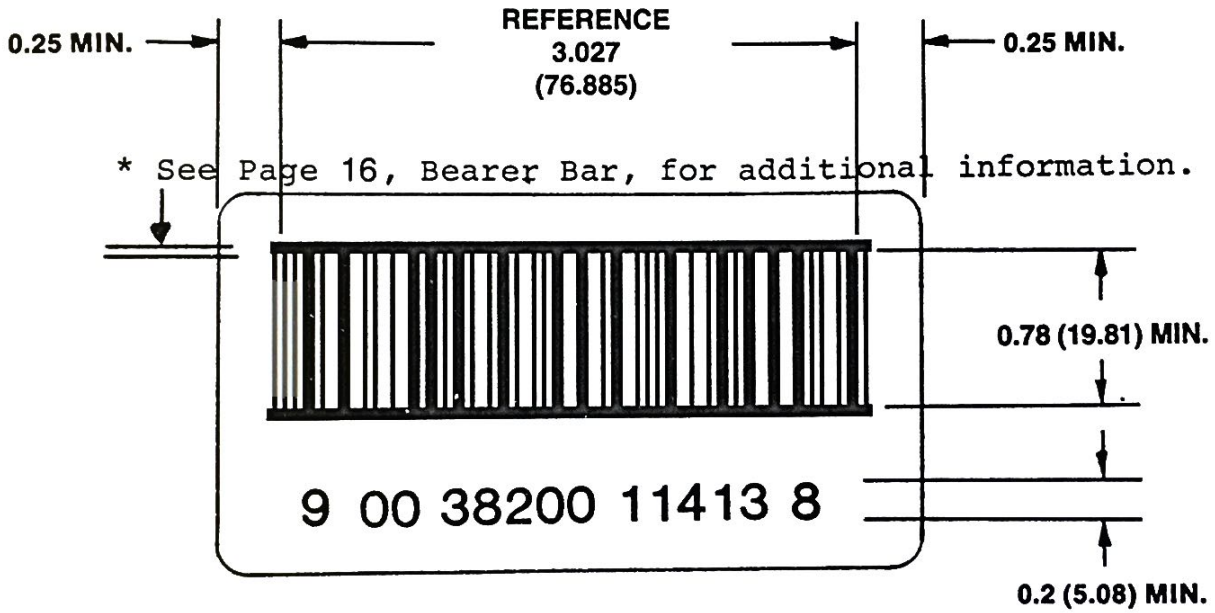


FIGURE 13
EXAMPLE DIMENSIONS
VARIABLE CONTENT SYMBOL
(WEIGHT IN POUNDS IN THIS EXAMPLE)
PART 1

PRINTED ON A LABEL (14 DIGITS)
HORIZONTAL MAGNIFICATION 0.625
NOT DRAWN TO SCALE

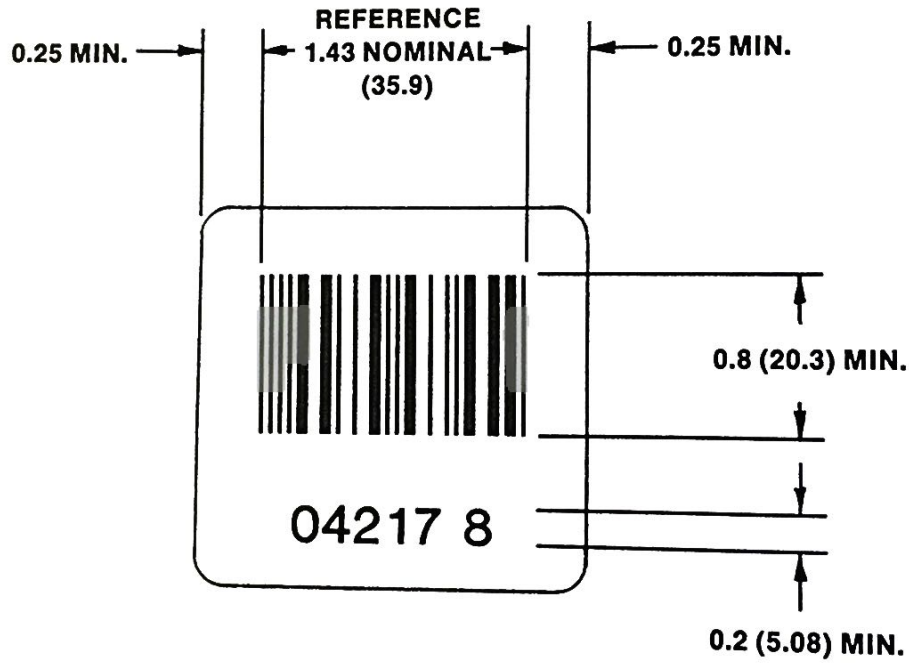


FIGURE 14
EXAMPLE DIMENSIONS
VARIABLE CONTENT SYMBOL
(WEIGHT IN POUNDS IN THIS EXAMPLE)
PART 2

PRINTED ON A LABEL (6 DIGITS)
HORIZONTAL MAGNIFICATION 0.625
NOT DRAWN TO SCALE